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भाग 85 ग्रीसेस के भंडारण पर तेल का पृथक्करण

(पहला पुनरीक्षण)

Methods of Test for Petroleum and Its Products

Part 85 Oil Separation on Storage of Greases

(First Revision)

ICS No 75.100

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Methods of Sampling and Test for Petroleum, its Products, Gaseous Fuels and Lubricants Sectional Committee, PCD 01

FOREWORD

This Indian Standard (Part 85) (First Revision) was adopted by the Bureau of Indian Standards on the recommendation of the Methods of Sampling and Test for Petroleum, its Products, Gaseous Fuels and Lubricants Sectional Committee and approval of the Petroleum, Coal and Related Products Division Council.

This standard was originally published in 1976 based on IP 121. The method defined in this standard is based on gravimetric analysis.

In this first revision, test procedure has been updated inline with the latest international practices. In this revision, considerable assistance has been derived from IP 121 : 2011 Determination of oil separation from lubricating grease - Pressure filtration method.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (*revised*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

METHODS OF TEST FOR PETROLEUM AND ITS PRODUCTS

Part 85 OIL SEPARATION ON STORAGE OF GREASES

(First Revision)

1 SCOPE

1.1 This standard describes a method for measuring the oil that separates from lubricating grease under the test conditions. It has been shown to provide a useful guide to their behavior on storage in cans or drums.

NOTES

1 The method is not intended to predict the oil separation tendencies of the grease under dynamic service conditions.

2 The method can be used for semi fluid greases but the precision for these materials has not been established.

1.2 This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2 SUMMARY OF METHOD

A weighed cylindrical column of grease resting on metal gauze is either subjected to a fixed pressure in excess of the hydrostatic pressure of the grease, or only to hydrostatic pressure. The quantity of oil separated through the gauze after standing for 42 h or 168 h at 40°C is taken as a measure of the stability of the grease towards oil separation during storage.

3 SIGNIFICANCE AND USE

This method has been found to correlate with the oil separation that occurs in pails of grease during storage. It is not intended to predict the oil separation tendencies of grease under dynamic service conditions.

4 APPARATUS

4.1 Assembly of the Apparatus — as shown in Fig. 1, consisting of parts given in **4.1.1** to **4.1.3**.

4.1.1 *Separation Cup* — stainless steel with dimensions as given in Fig. 1 with a cone of stainless steel woven wire gauze, cloth 240 mesh, aperture 63 μm, wire diameter 40 μm soldered to the bottom.

4.1.2 *Metal Weight* — stainless steel of mass 100 ± 0.1 g, with dimensions as given in Fig. 1.

4.1.3 *Oil Cup* — of stainless steel or glass, of diameter and depth to support the separation cup so that the apex of the gauze cone is at all times above the oil that is collected (*see* Note).

NOTE — The standard shallow bitumen penetration container, 55 mm in diameter and 35 mm in depth may conveniently be used for the oil cup.

4.2 Temperature controlled chamber — capable of maintaining a temperature of 40 ± 1 °C for the period of test.

4.3 Balance — capable of weighing to 1 mg.

4.4 Spatula

5 PROCEDURE

5.1 Carry out the test in triplicate.

5.2 Grease is solid at ambient temperature.

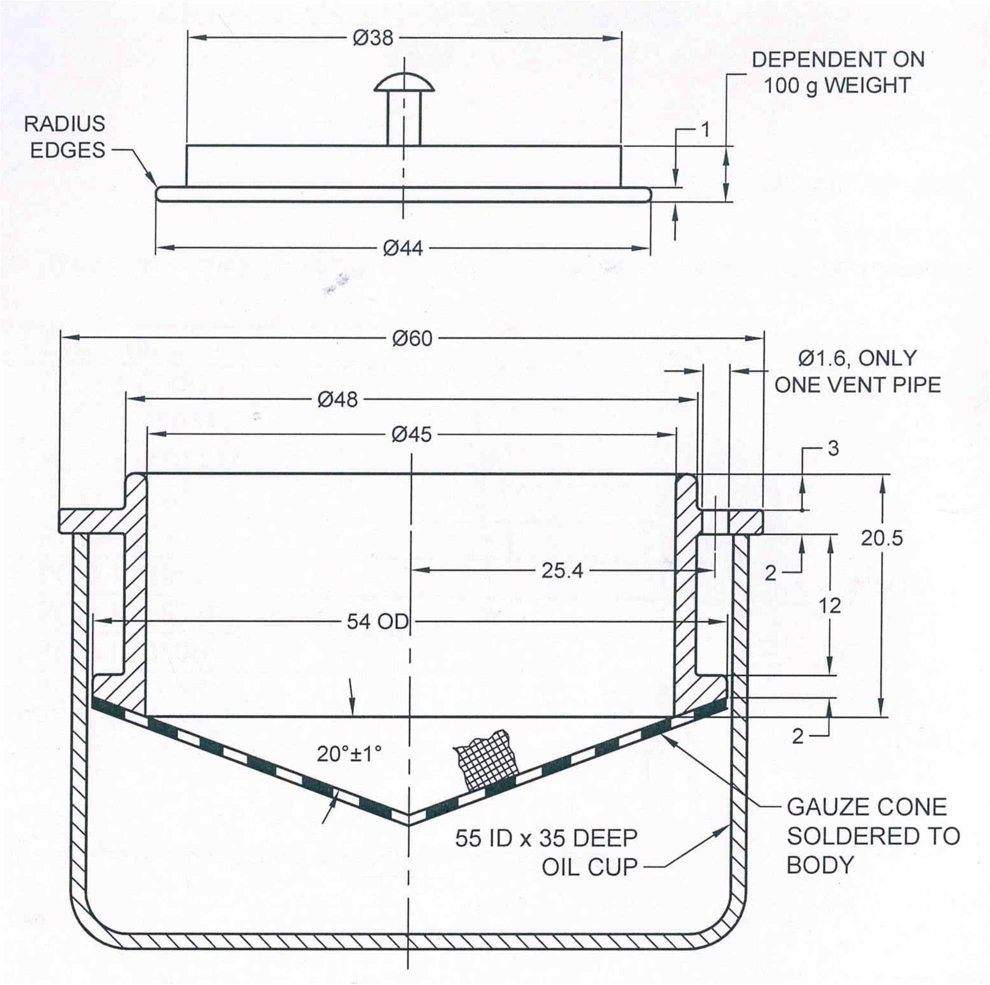
5.3 Using the balance (**4.3**) weigh the empty separation cup (**4.1.1**) and record the mass to the nearest mg.

5.4 Carefully push a small amount of grease up through the gauze from the underside, using a plastic spatula (**4.4**), until all the holes in the gauze are filled with grease. Remove any excess grease from the inner area, using the spatula and then fill the pot with test grease, making sure that no air pockets are formed in the process. Smooth off the top surface with the spatula and wipe off any grease extruding from the wire gauze.

5.5 Weigh the filled separation cup to the nearest mg and record the mass.

5.6 Using the balance weigh the empty oil cup to the nearest mg and record the mass.

5.7 Place the metal weight (**4.1.2**) centrally on top of the sample.



NOTE — Tolerance on all dimensions shall be ± 0.25 mm

All dimensions in millimetres

FIG. 1 ASSEMBLY OF THE SEPRATION APPARATUS

5.8 Place the assemble apparatus in the temperature controlled chamber (**4.2**) maintained at 40 ± 1 °C.

5.9 At the end of the test period either 42 h or 168 h, remove the separation cup from the oil cup. If a drop of oil remains on the apex of the wire gauze, dislodge it into the oil cup.

5.10 Cool the oil cup and its contents to ambient temperature and using the balance, weigh the oil cup and its contents to the nearest mg and record the mass.

5.11 Semi-fluid Grease

Proceed in accordance with **5.3** to **5.6** and **5.8** to **5.10**.

6 CALCULATION

Make a separate calculation for each determination.

$$\text{Separated oil percent } m/m = \frac{m_1 - m_2}{m_3 - m_4} \times 100$$

where

m_1 is the mass of the oil cup plus oil;

m_2 is the mass of the oil cup;

m_3 is the mass of separation cup plus grease; and

m_4 is the mass of the separation cup.

Calculate the mean of three results and report the result to the nearest 0.1 percent m/m and the duration of the test.

7 PRECISION

7.1 Repeatability, r — The difference between two test results, obtained by the same operator with the same apparatus under constant specified operating conditions on identical test material would, in the long run, in the normal and correct operation of the test method, exceed the following values given in Table 1 in only one case in twenty.

7.2 Reproducibility, R — The difference between two single and independent results by two different operators working in different laboratories on identical test material would, in the long run, in the normal and correct operation of the test method, exceed the following values given in Table 1 in only one case in twenty.

Table 1 Repeatability and Reproducibility

(*Clause* 7.1 *and* 7.2)

Temperature, °C	Test duration, h	r	R
40	42	0.7	1.6
40	168	1.0	3.2

NOTE — The precision values given in the Table 1 do not apply to semi-fluid greases.

8 TEST REPORT

The test report shall contain at least the following information:

a) Sufficient details for the complete identification of the product tested;

b) A reference to this standard;

c) The result of the test; and

d) Any deviation, by agreement or otherwise from the procedure specified.

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